



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/964,148	09/25/2001	Stephen C. Hahn	SUN-P6407-PIP	1747
22835	7590	01/17/2006	EXAMINER	
A. RICHARD PARK, REG. NO. 41241 PARK, VAUGHAN & FLEMING LLP 2820 FIFTH STREET DAVIS, CA 95616			BULLOCK JR, LEWIS ALEXANDER	
			ART UNIT	PAPER NUMBER
			2195	

DATE MAILED: 01/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/964,148	Applicant(s) HAHN ET AL.	
	Examiner Lewis A. Bullock, Jr.	Art Unit 2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,6-8,10-13,15,17-19,21-24,26,28-30,32 and 33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6-8,10-13,15,17-19,21-24,26,28-30,32 and 33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 September 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 12, 13, 15, 17-19, 21-24, 26, 28-30, 32 and 33 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 12, 13, 15, 17-19, 21 and 22 are directed toward a computer-readable storage medium which is defined in the specification to include computer instruction signals embodied in a transmission medium (with or without a carrier wave upon which the signals are modulated). As proper under M.P.E.P. 2106, the signals are non-statutory because they are not tangible embodied such that their functionality is realized. In addition, claims that recite nothing of the physical characteristics of a form of energy, such as a frequency, voltage, signal, or the strength of a magnetic field, per se, are non-statutory natural phenomena. Moreover, it does not appear that a claim reciting a signal encoded with functional descriptive material falls within any of the categories of patentable subject matter set forth in 35 U.S.C. 101.

First a claimed signal is not a "process" because it is not a series of steps. A claimed signal has no physical structure, does not itself perform any useful, concrete and tangible result and thus does not fit within the definition of a machine. A claimed signal is not matter, but a form of energy, and therefore is not a composition of matter that ordinarily "covers all compositions of two or more substances and includes all composite articles, whether they be results of chemical union, or of mechanical mixture.

And a signal is not a manufacture defined as a tangible physical article or object that is produced for use from raw or prepared materials by giving to these materials new forms, qualities, properties, or combinations. Therefore, the claims directed to a computer readable storage medium that includes signals are non-statutory as defined in claims 12, 13, 15, 17-19, 21 and 22.

In regards to claims 23, 24, 26, 28-30, 32 and 33, the claims detail an apparatus that allocates the system resources comprising a plurality of mechanisms. There is no language in the claims that the apparatus is a tangible structure. On page 7 of the specification, Applicant states that an operating system that supports flexible resource pools can be dynamically modified during system operation in accordance with an embodiment of the present invention. Therefore, the operating system is the apparatus and the mechanisms are instructions or software constructs of the operating system.

M.P.E.P. 2106 details

Data structures not claimed as embodied in computer-readable media are descriptive material *per se* and are not statutory because they are not capable of causing functional change in the computer. See, e.g., *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure's functionality to be realized, and is thus statutory.

Similarly, computer programs claimed as computer listings *per se*, i.e., the descriptions or expressions of the programs, are not physical "things." They are neither computer components nor statutory processes, as they are not "acts" being performed. Such claimed computer programs do not define any structural and functional interrelationships between the computer program and other claimed elements of a computer which permit the computer program's functionality to be realized. In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is

thus statutory. Accordingly, it is important to distinguish claims that define descriptive material *per se* from claims that define statutory inventions.

Computer programs are often recited as part of a claim. Office personnel should determine whether the computer program is being claimed as part of an otherwise statutory manufacture or machine. In such a case, the claim remains statutory irrespective of the fact that a computer program is included in the claim. The same result occurs when a computer program is used in a computerized process where the computer executes the instructions set forth in the computer program. Only when the claimed invention taken as a whole is directed to a mere program listing, i.e., to only its description or expression, is it descriptive material *per se* and hence nonstatutory.

Since a computer program is merely a set of instructions capable of being executed by a computer, the computer program itself is not a process and Office personnel should treat a claim for a computer program, without the computer-readable medium needed to realize the computer program's functionality, as nonstatutory functional descriptive material. When a computer program is claimed in a process where the computer is executing the computer program's instructions, Office personnel should treat the claim as a process claim. See paragraph IV.B.2(b), below. When a computer program is recited in conjunction with a physical structure, such as a computer memory, Office personnel should treat the claim as a product claim. See paragraph IV.B.2(a), below.

Therefore as stated above, a program, i.e. operating system, without the computer-readable medium needed to realize the computer program's functionality is nonstatutory functional descriptive material.

Claim Objections

2. Claims 11, 22, and 33 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The cited claims detail the resources can include central processing units; semiconductor

memory; swap space; and networking resources. All of the independent claims detail that the resources include central processing units and at least one of: memory, swap space, network interfaces, and scheduling classes. Therefore, the limitations of the dependent claims are essential met by the new limitations of the parent claims.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 4, 6-8, 10-13, 15, 17-19, 21-24, 26, 28-30, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over BRENNER (U.S. Patent 6,859,926).

As to claim 1, BRENNER teaches a method for allocating computer system resources (system resource) between concurrently executing workloads, comprising: establishing a first resource pool (class) that specifies resources (system resources), wherein the plurality of different computer system resources are components of a single computer system, wherein the computer system resources include central processing units (CPU time), and at least one of memory (shares of memory), swap space, network interfaces, and scheduling classes (col. 5, line 61 – col. 6, line 3; col. 6, lines 12-16), and wherein establishing the first resource pool involves establishing minimum size (minimum amount) and maximum size requirements (maximum amount) for a given resource that can be assigned to the first resource pool (col. 6, lines 12-16); allocating

the plurality of different computer system resources (resources) to one or more resource pools (classes), including the first resource pool, to create resource allocation (associated number of system resources to each class) (col. 5, line 61 – col. 6, line 3), wherein requirements of the first resource pool (max amount / min amount) are satisfied (via calculating the percentage goal and allocating accordingly) (col. 7, line 64 – col. 8, line 15; col. 8, lines 38-65), wherein prior to allocating the plurality of different computer system resources (allocation of additional resources), the method comprises: verifying that collective requirements of the one or more resource pools can be satisfied (via calculating the percentage goal and adjusting the priority allocation indication accordingly such that additional resources are allocated based on priority) (col. 7, line 64 – col. 8, line 15; col. 8, lines 38-65; col. 9, lines 18-24; col. 10, lines 10-25); and if the collective requirements cannot be satisfied, signaling a condition (via overcommitting the resources and signaling an orange range condition) (col. 11, line 56 – col. 12, line 5); and wherein resources (resources) allocated to the first resource pool (class) can change over time (via the allocation of additional resources) (col. 7, line 64 – col. 8, line 15; col. 8, lines 38-65; col. 9, lines 18-24; col. 10, lines 10-25; col. 6, lines 24-32); binding a first process (process) to the first resource pool (class) (col. 5, lines 26-38), so that the first process has access to the plurality of different computer system resources allocated to the first resource pool (col. 7, line 64 – col. 8, line 15; col. 8, lines 38-65; col. 9, lines 18-24; col. 10, lines 10-25); and storing a representation of the resource allocation to non-volatile storage (via storing the resource max/min limits for each class in a share/tier profile storage device) (col. 5, lines 16-25; col. 5, lines 33-36; col. 8, lines

57-65; col. 14, lines 5-8) so that the resource allocation can be reused after a machine failure (via retrieving the resource max/min limits for each class from a share/tier profile storage device) (col. 5, lines 16-25; col. 5, lines 33-36; col. 8, lines 57-65; col. 14, lines 5-8). BRENNER teaches setting a condition if the resource requirements are not satisfied, i.e. limits / percentage goal exceeds their limits by overcommitting resources. However, BRENNER does not explicitly state that this condition is an error condition. The claim language provides no details as to what constitutes an error condition or how it is handled. It would be obvious to one of ordinary skilled in the art at the time of the invention that the overcommitting setting condition of signaling an orange range condition would constitute an error condition and therefore would be obvious in view of BRENNER that the handling of the orange condition does not allocating additional resources to the class.

As to claim 2, BRENNER teaches allocating the plurality of different computer system resources (resources) to one or more resource pools (classes) involves: partitioning each of the plurality of different computer system resources (resources) into one or more partitions (classes), wherein a first partition is associated with a first resource (resource) and a second partition is associated with a second resource (resource); allocating the first partition to a single resource pool (tier), so that only processes associated with the single resource pool can access the first partition; and allocating the second partition to multiple resource pool (tier) so that processes associated with the multiple resources pools can share the second partition (col. 11,

lines 16-32; col. 7, line 64 – col. 8, line 15; col. 8, lines 38-65; col. 9, lines 18-24; col. 10, lines 10-25; col. 6, lines 24-32).

As to claim 4, BRENNER teaches establishing the first resource pool involves selecting a representation of the first resource pool from a plurality of possible files (via retrieving the resource max/min limits for each class from a share/tier profile storage device) (col. 5, lines 16-25; col. 5, lines 33-36; col. 8, lines 57-65; col. 14, lines 5-8). Official Notice is taken in that file systems are well known storage devices and therefore it would be obvious to one skilled in the art at the time of the invention that a file is selected and retrieved from the storage device that represents the resource max/min limits for each class in order to acquire the values.

As to claim 6, BRENNER teaches storing the representation of the resource allocation involves storing a representation of each of the one or more resource pools (classes) along with associated resources (via storing the resource max/min limits of each resource for each class to a share/tier profile storage device) (col. 5, lines 16-25; col. 5, lines 33-36; col. 8, lines 57-65; col. 14, lines 5-8).

As to claim 7, BRENNER teaches storing a representation of the resource allocation (via storing the resource max/min limits of each resource for each class to a share/tier profile storage device) (col. 5, lines 16-25; col. 5, lines 33-36; col. 8, lines 57-65; col. 14, lines 5-8). However, BHAGAT does not teach that the representation is in

an XML format. Official Notice is taken in that XML is well-known data format and therefore would be obvious to one skilled in the art that the representation are stored in an XML format for retrieval.

As to claim 8, BRENNER teaches wherein the first resource pool (class) is associated with a first project (via the classification rules); and wherein the first process is one of a plurality of processes (processes) associated with the first project (via the processes using classification rules to identify the class the process belongs wherein the classes have resource amounts for indicating the amount of system resource shares the classes have) (col. 5, line 48 – col. 6, line 16).

As to claim 10, BRENNER teaches adjusting the resource allocation of resource pools (classes) during system execution (based on performance indication considering minimum and maximum amount of resource shares) (col. 7, line 64 – col. 8, line 15; col. 8, lines 38-65; col. 9, lines 18-24; col. 10, lines 10-25). However, BRENNER does not explicitly indicate that the adjusting is performed dynamically. Official Notice is taken in that it is well known in the art that resource groups are adjusted dynamically and therefore would be obvious in view of the teachings of BRENNER that the classes are dynamically changed based on the performance indication that considers minimum and maximum amount of resource shares. For instance refer to U.S. Patent Application 2003/0028642, and U.S Patents 5,675,797 or 6,957,435.

As to claim 11, refer to claim 1 for rejection.

As to claims 12, 13, 15, 17-19, 21 and 22, reference is made to a computer readable medium that corresponds to the method of claims 1, 2, 4, 6-8, 10 and 11 and is therefore met by the rejection of claims 1, 2, 4, 6-8, 10 and 11 above.

As to claims 23, 24, 26, 28-30, 32 and 33, reference is made to an apparatus that corresponds to the method of claims 1, 2, 4, 6-8, 10 and 11 and is therefore met by the rejection of claims 1, 2, 4, 6-8, 10 and 11 above.

Response to Arguments

5. Applicant's arguments with respect to claims 1, 2, 4, 6-8, 10-13, 15, 17-19, 21-24, 26, 28-30, 32 and 33 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. In particular, Applicant amended the independent claims such that the system resources include **central processing units and at least one memory, swap space, network interfaces, and scheduling classes**. Dependent claims 11, 22 and 33 previously indicated that the resource **can include** the cited resources. The interpretation of can include would indicate that the resource may be the following, but not necessarily. The amendment indicates now that the resource is a processor and

one of the other resources. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

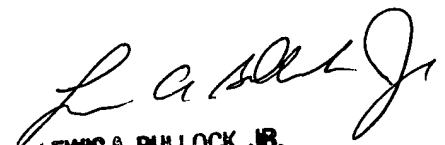
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lewis A. Bullock, Jr. whose telephone number is (571) 272-3759. The examiner can normally be reached on Monday-Friday, 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng An can be reached on (571) 272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

January 5, 2006


LEWIS A. BULLOCK, JR.
PRIMARY EXAMINER